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SYNOPSIS OF NORTH-AMERICAN INVERTEBRATES.

XVI. THE PHALANGIDA.

NATHAN BANKS.

THE Phalangida, or the Opiliones as they have been called by some authors, form a very distinct order of the Arachnida. The cephalothorax is of one piece, but often presenting one or two incomplete transverse furrows. There is also a furrow on each side, which is supposed to indicate that the portion beyond is a part of the pleura. On this part on each anterior side there is a small, somewhat circular depression, with a membranous bottom; these are called the lateral pores. On the middle line of the cephalothorax, and frequently near the anterior margin, is a rounded elevation, with a simple eye on each lateral face; this is the eye-tubercle, or eminence. The abdomen is united to the cephalothorax by the whole of its breadth, so that there is no trace of a pedicel. It is always quite broad when compared to its length, never slender, and usually quite high; in the males it is often tapering behind. There are considered to be eight segments in the abdomen, but in many forms the basal and median ones are poorly defined on the dorsum; on the venter there are usually six distinct segments. The underside of the cephalothorax is occupied by the coxæ and a median piece similar to and often called a sternum. It is, however, something quite different; it is the basal ventral segments advanced forward over the bases of the coxæ; it carries with it the opening of the genital organs, which thus, in certain forms, appears to issue close to the mouth. This advancement of the abdomen is so pronounced in many of our common forms that the coxæ are crowded at base and so appear to radiate from a central point. The legs are usually very long and slender, though tarsi and

ofttimes several of the other joints are divided into smaller portions by what are termed false articulations. Each tarsus is terminated by one or two claws.

The habits of the Phalangida are rather simple. With our common forms the length of life is but one year. The eggs are laid in the ground, or in crevices of wet or decaying wood, during the summer or fall; the young hatch in late fall or early spring. At birth they have the general appearance of

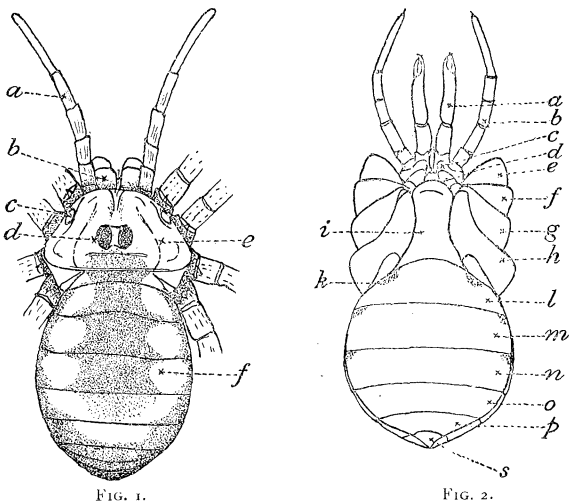


FIG. 1. — Dorsal view of a phalangid. *a*, palpus; *b*, mandible; *c*, lateral pore; *d*, eye-tubercle; *e*, cephalothorax; *f*, abdomen.

FIG. 2. — Ventral view of a phalangid. *a*, mandible; *b*, palpus; *c*, maxilla; *d*, pedal lobe; *e*, coxa I; *f*, coxa II; *g*, coxa III; *h*, coxa IV; *i*, advancement of abdomen; *k*, spiracle; *l*, 2d ventral segment; *m*, 3d ventral seg.; *n*, 4th ventral seg.; *o*, 5th ventral seg.; *p*, 6th ventral seg.; *s*, anal plate.

the adult, often, however, with slight modifications. Some species having short palpi when adult have long palpi when young. In several of our species the young have the patella of the palpus with a long branch, whereas it is absent or nearly so in the adults.

They spin no web and make no retreat of any kind. They usually move slowly, but a few can run rapidly. Some species occasionally congregate in numbers on trees. They feed mostly on living insects, but sometimes on decaying animal matter. They appear to have few enemies, but their long legs or hard

bodies are a serviceable protection. When handled they often exude a whitish fluid, which in some species has a disagreeable odor.

The points for the separation of species are often best observed in the males; this is especially true in the large genus *Liobunum*, in which the females are not known for several species. The males, as a rule, have more slender legs and palpi, and a more tapering abdomen; but in some species the abdomen of the male is very short and broadly truncate. In *Liobunum* the last joint of the male palpus shows a row of small denticles beneath. In a few forms the male has the hind coxæ enlarged. In several cases there are colorational differences between the sexes. In many forms the male is more spinose than the female. The order Phalangida is usually divided into two suborders: Mecostethi (*Laniatores* of Koch) and Plagiostethi (*Palpatores* of Koch):

- First ventral segment of abdomen not reaching in front of hind coxæ;
hind tarsi with two claws at tip or else with a compound claw; palpus
with tibia and tarsus more or less depressed; hind legs usually the
longest MECOSTETHI
- First ventral segment of abdomen extends much in front of hind coxæ;
all tarsi with but one simple claw; palpus with tibia and tarsus cylin-
drical, second legs the longest PLAGIOSTETHI

MECOSTETHI.

This suborder is represented in our fauna by two families:

1. Hind pair of coxæ free at apex; spiracles obscure . PHALANGODIDÆ
Hind coxæ wholly united to the venter; spiracles distinct COSMETIDÆ

The Cosmetidæ have but one genus, *Cynorta*, of three species, in the United States; they can be distinguished as follows:

1. Two acute spines near end of dorsal shield . . . *C. ornata* Say (Fla.)
Two rounded tubercles instead of spines . . . *C. sayii* Sim.¹ (S. States)
Neither spines nor tubercles; body with two pale spots above
C. bimaculata Banks (Calif.)

Our Phalangodidæ are arranged in four genera:

1. One compound claw to each of the four posterior tarsi; palpi not as
long as the body; eyes present *Sclerobunus*
Two simple claws to each posterior tarsus 2

¹ Includes *C. albolineatus* Sørensen.

2. Eye-tubercle arising from anterior margin of the cephalothorax; palpi shorter than the body Sitalces
Eye-tubercle arising back from the margin; palpi longer than body. 3
3. Tarsus II about twice as long as body, its joints very slender; no eyes
Phalangodes
Tarsus II about length of body; eyes often present . . . Scotolemon

SCOTOLEMON Lucas :

1. Eye-tubercle ends in a spine; second joint of palpus three times as long as wide; body with short, stout spines . . . *S. spinifera* Pack. (Fla.)
Eye-tubercle without spine; second joint of palpus about twice as long as broad 2
2. Tarsus II with short joints; palpi stouter
S. flavescens Pack. (Ky., Ind., Va.)
Tarsus II with joints slender; palpi more slender
S. californica Bks. (Calif.)

SCLEROBUNUS Banks :

- Color red, tips of legs black *S. robustus* Pack. (W. States)
Color brown, tips of legs yellowish . . . *S. brunneus* Bks. (Wash., Alaska)

SITALCES Simon *S. californica* Bks. (Calif.)PHALANGODES Tellkamp. *P. armata* Tellk. (Mammoth Cave)

PLAGIOSTETHI.

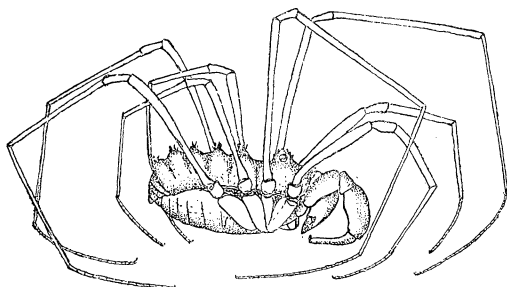
Three families occur in the United States :

1. Last joint of palpus with a claw at end, this joint longer than preceding one (except in male of *Protolophus*) . . . PHALANGIDÆ
Last joint of palpus much shorter than penultimate, no claw at its tip . 2
2. Palpi very short, concealed under the projection of eye-tubercle
TROGULIDÆ
Palpi long and prominent NEMASTOMATIDÆ

Our genera of Phalangidæ are separated as below :

1. Male with palpus enlarged, last joint shorter than penultimate; female with patella of palpus provided with a long branch; palpal claw smooth; a row of teeth on sides of coxæ . (Protolophini) *Protolophus*
Last joint of palpus longer than penultimate; patella without branch in adult 2
2. Eye-tubercle of enormous size, three long spines on femur of palpus
(Caddini) *Caddo*
Eye-tubercle of normal size 3
3. A group of spinules on anterior margin of the cephalothorax and the eye-tubercle spinose; palpal claw smooth, rarely if ever with lateral rows of teeth on coxæ, frequently with spines on femur of palpus
(Phalangini) 10

- Eye-tubercle smooth, if spinose then no group of spinules on anterior margin of the cephalothorax 4
4. Palpal claw denticulate, a row of teeth (adult) on sides of coxæ, distinct at least on anterior side of coxa I, legs usually long . (Liobunini) 5
- Palpal claw smooth, no such rows of teeth on coxæ, legs usually shorter (Leptobunini) 7
5. Body very hard and granulate above and below; legs very short, fourth pair nearly as long as second pair Mesosoma
- Body softer, although often subcoriaceous; rarely granulate below; legs longer, fourth pair much shorter than second pair 6

FIG. 3.—*Protolophus singularis*.

6. Femur I longer than body or in some females a little shorter, but longer than width of body Liobunum
- Femur I shorter than body, in females not as long as width of body Hadrobunus
7. Inner margin of patella extended; body very hard and rough; eye-tubercle spinose: coxæ III and IV in males enlarged . Trachyrhinus
- Inner margin of patella not extended, or at least the body quite soft 8
8. Legs slender and long as in Liobunum, coxa II not shut out by I and III Leuronychus
- Legs much shorter, femora I thickened or not as long as width of body; eye-tubercle smooth 9
9. Femora and tibiæ I and III thickened; coxa II shorter than I Eurybunus
- Femora and tibiæ I and III not thickened; coxa II about as large as I Leptobunus
10. Femur of palpus provided with prominent spines 11
- No such prominent spines 12
11. No false articulations in metatarsus I; eye-tubercle more remote from anterior margin Lacinius
- At least one false articulation in metatarsus I; eye-tubercle nearer to margin Oligolophus

EURYBUNUS Banks :

Body smooth ; leg IV nearly as long as II . *E. brunneus* Bks. (Calif.)

Body with transverse rows of spinules ; leg IV much shorter than II

E. spinosus Bks. (Calif.)

TRACHYRHINUS Weed :

Coxæ pale, maculate with brown, legs mostly pale

T. marmoratus Bks. (N. Mex.)

Coxæ unicolorous, legs mostly black . . . *T. favosus* Wood (Colo.)

LEURONYCHUS Banks :

Body with a brown dorsal vitta, patellæ of legs brown lineate with white *L. pacificus* Bks. (Calif., Wash.)

Body without vitta, patellæ not lineate . . . *L. parvulus* Bks. (Wash.)

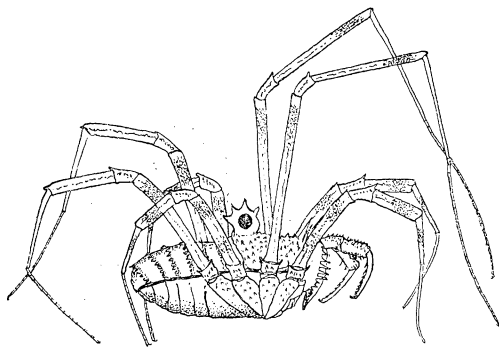


FIG. 4. — *Lacinus texanus*.

LIOBUNUM Koch. *Males* :

1. A distinct spur on the femur of palpus, dorsum yellowish, without stripe, trochanters concolorous with coxæ

L. calcar Wood (N. States)

No such spur 2

2. Palpus, except tarsus, mostly black 3

Palpus yellowish or brownish 4

3. Dorsum dark, often with two large pale spots behind, trochanters usually pale *L. exilipes* Wood (W. Coast)

Dorsum pale yellowish, no stripe, trochanters and bases of legs black *L. nigripalpi* Wood (E. States)

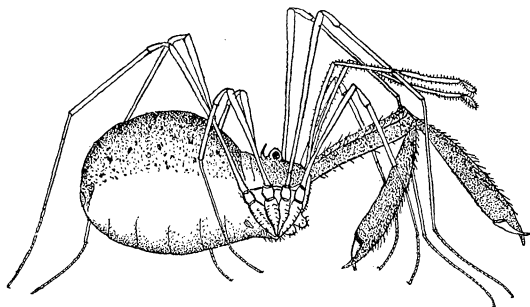
4. Femur, patella and tibia of palpus plainly incrassate, dorsum with a black stripe, trochanters dark brown . . . *L. crassipalpis* Bks. (D. C.)

Palpal joints not incrassate 5

5. Femur of palpus very long, curved, extending much above surface of cephalothorax, dorsum with a distinct black stripe, trochanters black *L. vittatum* Say ¹ (U. S.)

¹ Includes *Liobunum dorsatum* Say.

- Femur of palpus shorter, dorsum without distinct black stripe . . . 6
6. Dorsum dark, with two large yellowish spots on union of cephalothorax and abdomen *L. bimaculatum* Bks. (Calif.)
Not so marked 7
7. Apex of tibia II white, trochanters black, body short
L. longipes Weed (E. States)
Apex of tibia II not white 8
8. Apex of femur I white, preceded by a black band, coxæ pale outside *L. townsendi* Weed (N. Mex., Tex.)
Femur I not so marked 9
9. Trochanters dark, contrasted in color with the coxæ 10
Trochanters pale, concolorous with coxæ 14
10. Legs black, dorsum dark brown, eye-tubercle slightly spinulate
L. nigripes Weed (Ohio)
Legs pale, sometimes marked with black 11

FIG. 5. — *Taracus pallipes*.

11. Femur I barely as long as body, tips of femora and tibiae dark brown or black, eye-tubercle nearly smooth *L. formosum* Wood (E. States)
Femur I plainly longer than body, eye-tubercle spinulate, legs not so distinctly marked with black 12
12. Abdomen tapering behind, dorsum golden, base of femora not black, trochanters dark brown, of moderate size
L. verrucosum Wood (N. Y.)
Abdomen rather short and broad, legs very long, small species . . 13
13. Dorsum and trochanters light brown, bases of femora not black
L. bicolor Wood (S. States)
Dorsum yellowish, trochanters and bases of femora black
L. speciosum Bks. (Ala.)
14. Body short and broad, femur IV often black at base, small species
L. politum Weed (E. States)
Body tapering behind, femur IV not black at base, larger species . . 15
15. Extremely spinose beneath, an impressed line on last ventral segment, large species *L. flavum* Bks. (S. States)

Moderately spinose, rather granulate, no impressed line, moderate size *L. ventricosum* Wood (E. States)

HADROBUNUS Banks :

Dorsum finely spinulate ; legs longer, in female not much marked with brown at tips of joints *H. grande* Say (E. States)

Dorsum more smooth, with many small, round, pale spots ; legs shorter, more marked with brown

H. maculosum Wood (S. States)

MESOSOMA Weed *M. niger* Say (S. States, Neb., Dak.)

The Nemastomatidæ include three genera, which can be separated as below :

1. Mandibles longer than the body, projecting forward

(Ischyropsalinæ) Taracus

Mandibles shorter than body, directed downward . (Nemastominæ) 2

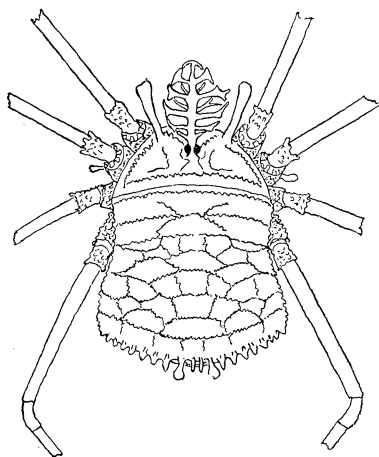


FIG. 6. — *Dendrolasma mirabilis*.

2. Fourth joint of palpus much thickened Phlegmacera
- Fourth joint of palpus scarcely thickened Nemastoma

PHLEGMACERA Packard :

1. Several false articulations in femora III and IV, eye-tubercle very broad *P. bryantii* Bks.¹ (Alaska)

No false articulations in femora 2

2. A pair of prominent erect spines on the anterior part of the abdomen *P. occidentalis* Bks. (Wash.)

No such spines *P. cavicoles* Pack.² (Ky., N. Y., N. H.)

¹ Includes *Tomicomerus bispinosus* Pavesi.

² Includes *Sabacon spinosus* Weed.

NEMASTOMA Latreille :

1. Fourth joint of palpus less than twice as long as the fifth

N. inops Pack. (Ky.)

Fourth joint of palpus twice as long as the fifth 2

2. Dorsum with some spines *N. modesta* Bks. (Calif., Wash.)

Dorsum without spines *N. troglodytes* Pack. (Utah)

TARACUS Simon :

1. Dorsum of abdomen spinose, mandibles pale in color

T. spinosa Bks. (Calif.)

Dorsum of abdomen smooth, mandibles dark 2

2. Mandibles smooth *T. pallipes* Bks. (Wash.)

Mandibles rough, very distinct spines on basal joint

T. packardii Sim. (Colo., N. Mex.)

The Trogluidæ in our fauna is represented by but two genera, both restricted to the Pacific slope :

1. Eye-tubercle projecting in the form of a spoon, two spines at each side on the anterior margin Ortholasma

Eye-tubercle branched, a single club at each side on the anterior margin Dendrolasma

ORTHOLASMA Banks *O. rugosa* Bks. (Wash.)

DENDROLASMA Banks *D. mirabilis* Bks. (Calif., Wash.)

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¹ This list was omitted in Synopsis IX.